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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/162,992	09/30/1998	TADASHI SENOO	P98-1703	9466

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BELL, BOYD & LLOYD, LLC
P. O. BOX 1135
CHICAGO, IL 60690-1135

EXAMINER

DOVE, TRACY MAE

ART UNIT	PAPER NUMBER
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1745

23

DATE MAILED: 05/09/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

MF-23

Office Action Summary

Application No.

09/162,992

Applicant(s)

Senoo

Examiner

Tracy Dove

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on Feb 19, 2002

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 2-9 and 12 is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) 2-9 and 12 is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☒ All b) ☐ Some* c) ☐ None of:

1. ☒ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)

18) ☐ Interview Summary (PTO-413) Paper No(s). _____

16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

19) ☐ Notice of Informal Patent Application (PTO-152)

17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____

20) ☐ Other:

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DETAILED ACTION

This Office Action is in response to the communication filed on 2/19/02. Applicant's arguments have been considered, but are not persuasive. Claims 2-9 and 12 are pending. Claims 1, 10 and 11 have been canceled.

Request for Continued Examination

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/19/02 has been entered.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 2-9 and 12 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 12 recites "a specific surface area that ranges from 0.1 to less

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than $3.2 \text{ m}^2/\text{g}$ ", which is not supported by the specification. The specification states on page 9, last paragraph, that the specific surface area of the graphite ranges from 0.1 to $10 \text{ m}^2/\text{g}$, preferably 0.1 to $5 \text{ m}^2/\text{g}$. There is no support for the end point $3.2 \text{ m}^2/\text{g}$.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akashi, EP 0724305 A1 in view of Ozaki et al. (US 5,522,127), Kaschmitter et al. (US 5,636,437), Hayashi et al. (US 5,906,900) and/or Takami et al. (US 5,753,387).

See discussion of Akashi in the Office Action of 7/27/01 (pages 4-5).

Akashi does not explicitly teach that the specific surface area of the graphitized carbonaceous material is 0.1 - $3.2 \text{ m}^2/\text{g}$.

However, Ozaki teaches in col. 3, lines 26-67 and line 4, lines 5-14, a method for the preparation of mesophase graphite particles. The specific surface area of the mesophase graphite particles ranges from $3.2 \text{ m}^2/\text{g}$ to $3.4 \text{ m}^2/\text{g}$. Ozaki teaches in col. 3, lines 8-14 that the negative electrode formed by carbonizing and graphitizing leads to a smooth intercalating of lithium at charging over a wide temperature range resulting in an increased cell capacity.

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Also, Hayashi teaches an electrode material for a non-aqueous battery including a graphite-like carbonaceous material. The specific surface area of the material (measured using BET method) falls within the range of preferably 1-10 m²/g, particularly preferably 2-6 m²/g. See col. 9, lines 19-23.

Takami teaches an electrode material including a graphite region (col. 4, lines 61-67). The electrode material may include carbon fibers with a specific surface area preferably in the range of 0.1-5 m²/g. See col. 7, lines 6-7. Takami teaches the graphitizable carbon precursor may be mesophase pitch (col. 8, lines 29-30).

Furthermore, Kaschmitter teaches electrodes fabricated from low surface area (<50 m²/g) graphite and cokes exhibit excellent reversible lithium intercalation characteristics, making them ideal for use as anodes in high voltage lithium insertion (lithium-ion) batteries. See abstract. Note the Examples teach SFG6 graphite powder, which has a BET surface area of 13 m²/g (see Sasaki et al.).

Thus, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because Ozaki, Hayashi, Takami and Kaschmitter all teach that having a low surface area carbonaceous material for an electrode of a lithium secondary battery is known in the art. Ozaki teaches a low surface area carbonaceous material leads to a smooth intercalating of lithium at charging over a wide temperature range resulting in an increased cell capacity. Kaschmitter teaches electrodes fabricated from low surface area graphite exhibit excellent reversible lithium intercalation characteristics, making them ideal for use as

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anodes in high voltage lithium insertion batteries. Thus, one of skill would be motivated to use the low surface area carbonaceous material of the Ozaki, Hayashi, Takami or Kaschmitter for the carbonaceous material of Akashi to improve cell capacity and reversible lithium intercalation characteristics.

Regarding the limitation "obtained from a plurality of meso-carbon micro-beads" in claim 12, the courts have ruled that product-by-process limitations, in the absence of unexpected results, are obvious. See In re Fessman.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is (703) 308-8821. The Examiner may normally be reached Monday-Thursday (9:00 AM-7:30 PM). My supervisor is Pat Ryan, who can be reached at (703) 308-2383. The Art Unit receptionist can be reached at (703) 308-0661 and the official fax numbers are 703-872-9310 (after non-final) and 703-872-9311 (after final).

April 29, 2002


CAROL CHANEY
PRIMARY EXAMINER